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Electrical resistivity and thermal conductivity of liquid aluminum in the two-temperature state

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Abstract

© Published under licence by IOP Publishing Ltd. The electrical resistivity and thermal conductivity of liquid aluminum in the two-temperature state is calculated by using the relaxation time approach and structural factor of ions obtained by molecular dynamics simulation. Resistivity witin the Ziman-Evans approach is also considered to be higher than in the approach with previously calculated conductivity via the relaxation time. Calculations based on the construction of the ion structural factor through the classical molecular dynamics and kinetic equation for electrons are more economical in terms of computing resources and give results close to the Kubo-Greenwood with the quantum molecular dynamics calculations.

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